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PPLICATION NO.	F	ILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO
09/937,724	09/28/2001		Jean-Marie Aubry	2001-1443A	7009
513	7590	05/08/2003			
WENDERO 2033 K STR		JD & PONACK, I	EXAMINER		
SUITE 800		•	PRICE, ELVIS O		
WASHING	ON, DC	20006-1021	ART UNIT	PAPER NUMBER	
			·	1621	11
				DATE MAILED: 05/08/2003	

Please find below and/or attached an Office communication concerning this application or proceeding.

4)		Application	n No.	Applicant(s)
		09/937,72	<u>.</u> 4	AUBRY ET AL.
	Office Action Summary	Examiner		Art Unit
		Elvis O. Pı	rice	1621
Period fo	The MAILING DATE of this commun.	ication appears on the	cover sheet wi	
A SHOTHE No. 1 Exter after 1 f the 1 f NO. 2 Failur Any r	ORTENED STATUTORY PERIOD FOMAILING DATE OF THIS COMMUNI- sisions of time may be available under the provisions SIX (6) MONTHS from the mailing date of this comm period for reply specified above is less than thirty (3/ period for reply is specified above, the maximum sta- te to reply within the set or extended period for reply eply received by the Office later than three months and d patent term adjustment. See 37 CFR 1.704(b).	CATION. of 37 CFR 1.136(a). In no eve unication. 0) days, a reply within the statu- stutory period will apply and wil will. by statute, cause the appl	int, however, may a retory minimum of thirt I expire SIX (6) MON	eply be timely filed y (30) days will be considered timely. THS from the mailing date of this communication. ANDONED (35 U.S.C. 6.13)
1)🛛	Responsive to communication(s) file	ed on <u>20 February 20</u>	<u>03</u> .	
2a)⊠	This action is FINAL .	2b) This action is	non-final.	
3) <u> </u>	Since this application is in condition closed in accordance with the pract on of Claims	for allowance except ice under <i>Ex parte Qเ</i>	for formal mat layle, 1935 C.[ters, prosecution as to the merits is D. 11, 453 O.G. 213.
4)🖂	Claim(s) 1-11 is/are pending in the a	application.		•
4	a) Of the above claim(s) is/ar	e withdrawn from con	sideration.	
	Claim(s) is/are allowed.			
	Claim(s) <u>1-11</u> is/are rejected.			
	Claim(s) is/are objected to.			
	Claim(s) are subject to restrict	tion and/or election re	quirement.	
	on Papers		•	
9)□ T	he specification is objected to by the	Examiner.		
10)∐ T	he drawing(s) filed on is/are:	a) accepted or b)	objected to by th	e Examiner.
	Applicant may not request that any obje	ection to the drawing(s) I	oe held in abeya	nce. See 37 CFR 1.85(a).
11) 🗌 T	he proposed drawing correction filed	on is: a)	proved b)∐ di	sapproved by the Examiner.
	If approved, corrected drawings are req	• •	ce action.	
	he oath or declaration is objected to	by the Examiner.		•
riority u	nder 35 U.S.C. §§ 119 and 120			
13)🛛 🗸	Acknowledgment is made of a claim t	for foreign priority und	ler 35 U.S.C. §	119(a)-(d) or (f).
a)[∑	〗All b) ☐ Some * c) ☐ None of:			
•	 Certified copies of the priority d 	locuments have been	received.	
2	2. Certified copies of the priority d	locuments have been	received in Ap	plication No
	B. Copies of the certified copies o application from the Internate the attached detailed Office action	itional Bureau (PCT R	(ule 17.2(a)).	•
	knowledgment is made of a claim for		<u>-</u>	
a)	☐ The translation of the foreign lang cknowledgment is made of a claim fo	juage provisional app	lication has be	en received.
ttachment(:	s)			•
) 🔲 Notice	of References Cited (PTO-892) of Draftsperson's Patent Drawing Review (PT ation Disclosure Statement(s) (PTO-1449) Pag	O-948) 5	Interview Si Notice of In Other:	ummary (PTO-413) Paper No(s) formal Patent Application (PTO-152)
Patent and Trac O-326 (Rev.		Office Action Summary		Part of Paper No. 11

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DETAILED ACTION

Claims 1-11 are pending in the application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barton et al. {J. Chem. Soc., Perkin Transactions 1, 1975, pp. 1610-1614}, in view of Van Laar et al. {Chem. Commun., pp. 267-268}.

Applicants claim a process for the oxidation of hydrophobic organic substrates, by means of singlet oxygen, which comprises adding between 30% to 70% hydrogen peroxide to the said substrates in an organic solvent in the presence of a homogeneous catalyst.

Barton et al. teach a process for the oxidation of a hydrophobic organic substrate which comprises adding a homogeneous molybdate (ammonium or sodium molybdate)-hydrogen peroxide catalyst (30% peroxide was used to make the catalyst) to the substrate(s) in the presence of an organic solvent such as tertiary butanol (see pg. 1612, second column, experimental section). The difference between the presently claimed invention and what is taught by the Barton et al. reference is that Barton et al. do not explicitly teach that the oxidative reaction takes place by means of singlet oxygen and Barton et al. are silent about the reaction temperature.

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Van Laar et al. teach that singlet oxygen can be generated from alkaline hydrogen peroxide in the presence of homogeneous metal ion catalyst such as molybdate (see first paragraph of page 267).

Thus, it would have been *prima facie* obvious to one having ordinary skill in the art to arrive at the presently claimed invention, because Barton et al. teach an oxidation process which comprises adding 30% hydrogen peroxide to hydrophobic organic substrates in an organic solvent in the presence of a homogeneous catalyst (ammonium molybdate or sodium molybdate) and Van Laar et al. teach that singlet oxygen is generated as a reactive species, from alkaline hydrogen peroxide in the presence of homogeneous metal ion catalyst such as molybdate. Additionally, one of ordinary skill in the art would have expected that the reaction temperature of the Barton et al. oxidation process was room temperature since Barton et al. were silent about the reaction temperature.

The skill artisan would have been motivated to oxidize organic substrates as presently claimed, in view of the teachings of the Barton et al. and Van Laar et al. references, using the molybdate-hydrogen peroxide homogeneous catalyst taught by Barton et al., so as to arrive at alternative means, depending on cost and availability of the said catalyst system, for oxidizing hydrophobic organic substrates.

Response to Arguments

Applicants' arguments filed 2/20/02 have been fully considered but they are not persuasive.

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Applicants argue that the homogeneous molybdate catalyst system in the Van Laar et al. reference requires the presence of a soluble base (alkaline conditions) whereas the homogeneous molybdate catalyst system in the presently claimed invention is absent of added base.

This argument is not convincing because the Examiner has applied the Van Laar et al. reference to demonstrate to applicants that the molybdate-hydrogen peroxide catalyst system proceeds via a singlet oxygen intermediate in oxidation reactions. It is still the Examiner's contention that the oxidation reaction(s), carried out with the homogeneous molybdate-hydrogen peroxide catalyst system in Barton et al. reference, proceeds via a singlet oxygen mechanism. And the molybdate-hydrogen peroxide catalyst system taught by the Barton et al. reference does not have any added base.

Applicants continue to argue that the fact that compound V is converted into compound VI (instead of compound VII) with molybdate-hydrogen peroxide, according to Barton et al., implies that it is unlikely that the singlet oxygen intermediate is being formed despite a difference in temperature in the molybdate-hydrogen peroxide reaction versus the cerium-hydrogen peroxide reaction.

This argument is not persuasive because the difference in the reaction conditions of the molybdate-hydrogen peroxide reaction versus the cerium-hydrogen peroxide reaction (as described in Barton et al.) are not merely a temperature difference, as applicants have asserted, but rather the two separate reactions also differ by the amount of catalyst utilized, hydrogen peroxide, and solvent as well as the reaction times. Also, the Barton et al. reference (page 1612, paragraph one) confirms that

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singlet oxgen generation is not determined by the specific product that is formed in oxidation reactions since the treatment of compound V with photo energy (via a singlet oxygen mechanism) versus the cerium-hydrogen peroxide catalyst system gives different products, respectively.

Applicants appear to suggest that the molybdate mediated oxidation reaction described in the Barton et al. reference, might be a photochemical reaction by stating that photochemical oxidation is carried out at <u>room temperature</u> because heating is very uncommon for photochemical singlet oxygenations and Barton et al. describes (on page 1612, first column) that with photochemically generated singlet oxygen <u>at room temperature</u> compound V is transformed into IX as the major product after reduction of VII to IX. Applicants then assert that this is similar to the absence of any specification for the temperature at which the molybdate oxidations were carried out, which are assumed (by the Examiner) to be carried out at room temperature).

This argument is not convincing to the Examiner because it is of common knowledge, to one having ordinary skill in the art, that photochemical reactions are not the only type of chemically reactions that are carried out at room temperature. Hence, a reaction carried out at an unspecified reaction temperature (as in the molybdate oxidations described in the Barton et al. reference) should not be definitively construed as a photochemical reaction. The Examiner would also like to remind applicants that the presently claimed invention (Independent claims 1 and 9) does not exclude photochemical oxidation reactions, which may generate singlet oxygen.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elvis O. Price whose telephone number is 703 605-1204. The examiner can normally be reached on 8:30 am to 5:00 pm; Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter can be reached on 703 308-4532. The fax phone numbers for the organization where this application or proceeding is assigned is 703 308-4556 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-1235.

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Elvis O. Price, Ph.D.

May 4, 2003

Johann R. Richter, Ph.D., Esq. Supervisory Patent Examiner Technology Center 1600